96M2891o

Single Board Computer

User's Manual

Version 1.0

Copyright © DSM Computer AG, 2004. All rights reserved.
All other brand names are registered trademarks of their respective owners.

Table of Contents

How to Use This Manual

Chapter 1 System Overview 1-1

1.1 Introduction 1-1
1.2 Check List 1-2
1.3 Product Specification 1-2
1.3.1 Mechanical Drawing 1-5
1.4 System Architecture 1-6

Chapter 2 Hardware Configuration 2-1

2.1 Jumper Setting 2-1
2.2 Connector Location 2-3

Chapter 3 System Installation 3-1

3.1 Socket 370 Celeron/Pentium-III Processor 3-1
3.2 Main Memory 3-2
3.3 Installing the Single Board Computer 3-3
3.3.1 VIA CLE266 Chipset Component Driver 3-3
3.3.2 Integrated Graphics / Video Accelerator Chipset 3-3
3.3.3 Realtek 8110S Gigabit Ethernet controller 3-4
3.3.4 Clear CMOS Operation 3-5
3.3.5 Watch Dog Timer Programming 3-5

Chapter 4 BIOS Setup Information 4-1

4.1 Entering Setup 4-1
4.2 Main Menu 4-2
4.3 Standard CMOS Setup Menu 4-3
4.4 IDE Adaptors Setup Menu 4-5
4.5 Advanced BIOS Features 4-6
4.6 Advanced Chipset Features 4-9
4.7 Integrated Peripherals 4-10
4.8 Power Management Setup 4-15
4.9 PnP/PCI Configurations 4-18
4.10 PC Health Status 4-20
4.11 Frequency/Voltage Control 4-21
4.12 Default Menu 4-21
4.13 Supervisor/User Password Setting 4-22
4.14 Exiting Selection 4-23

Chapter 5 Troubleshooting 5-1

5.1 BIOS Setting 5-1
5.2 FAQ 5-3

Appendix A
Appendix B

How to Use This Manual

The manual describes how to configure your 96M2891o system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and CompactFlash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. Provides you a few useful tips to quickly get your 96M2891o running with no failure. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **DSM Computer AG** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : http://www.DSM.AG.

Chapter 1
System Overview

1.1 Introduction

96M2891o, PICMG 1.0 SBC supports Intel® Pentium® III / Celeron processor, DDR SDRAM, Video display, Gigabit Ethernet and Audio.

The 96M2891o adopts VIA CLE266 chipset that support Intel® Pentium® III, & Celeron processor with DDR 200/266 up to 2GB system memory. This special processor and memory combination provides user a lower TDP (Thermal Design Power) processor with smaller cooler and better availability of memory. Under critical environment and space limitation consideration, some users dare not use bigger TDP processor or cannot use processor that is bundled with big cooler. Therefore Intel® Pentium® III level processor is still the best choice. SBC designed with old chipset only supports SDRAM, along with time shifting SDRAM availability is getting worse and worse. It is wonderful idea to have common memory modules in stock for both P3 and P4 based system.

In additional to the features of processor and system memory, CLE266 also integrates AGP 4X equivalent performance graphics accelerator. With SMA (Shared Memory Architecture), it shares 16, 32 or 64MB system memory for frame buffer. Besides, 96M2891o also supports one Gigabit Ethernet, six USB 2.0 ports and Audio in/out. Ethernet and USB port become very popular interface for data upstream and downstream interfaces. A higher bandwidth Ethernet port speeds up transactions with server, to have Gigabit grade Ethernet is mandatory. USB is a very friendly interface; its hot-swappable, rich devices and easily installation are making it getting more and more popular.

With VIA chipset supply life cycle guarantee, the chipset shall continue going till the end of year 2007. And last buy notice will be issued at least six months ahead of EOL (End-of-Life).

In summary, 96M2891o offers

- Cost-effective design for P3 level processor and DDR memory
- AGP 4X equivalent performance display
- Gigabit Ethernet
- Audio in/out
- Six USB 2.0 ports, two serial ports, two EIDE 133 channel, one floppy channel, one parallel port and one type II CompactFlash socket

1.2 Check List

The 96M2891o package should cover the following basic items

- ✓ One 96M2891o single board computer
- ✓ One dual Serial ports cable kit
- ✓ One Parallel port cable kit
- ✓ One FDC cable
- ✓ One IDE cable
- ✓ One Y-cable cable for PS/2 keyboard and mouse
- ✓ One 5-pin keyboard cable for backplane connection
- ✓ One 4-pin ATX power control cable for backplane connection
- ✓ One Installation Resources CD-Title
- ✓ One booklet of 96M2891o manual

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

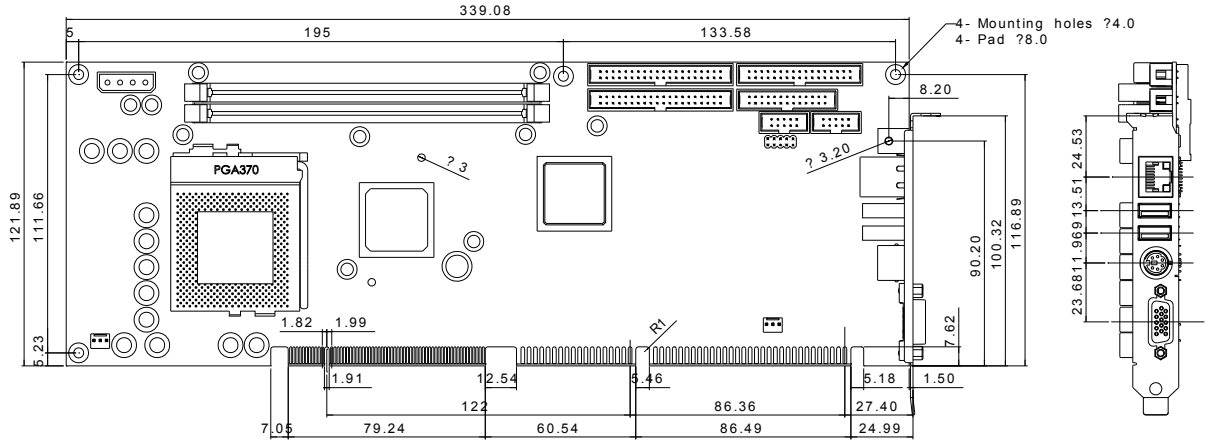
1.3 Product Specification

- **Main processor**
  - Intel® Pentium® III / Celeron Processor/FC-PGA2
  - FSB: 66/100/133MHz
- **BIOS**
  Phoenix (Award) system BIOS with 4Mb Flash ROM with easy upgrade function ACPI, DMI, Green function and Plug and Play Compatible
- **Main Memory**
  - Two DIMM sockets support 200/266 DDR-SDRAM up to 2GB System Memory
  - Non-ECC, non-buffered DIMMS only
- **L2 Cache Memory**
  512/256/128KB in Intel® Pentium® III / Celeron Processor
- **Chipset**
  VIA CLE266 chipset (VT8623 & VT8235)
- **Bus Interface**
  - Follow PICMG 1.0 Rev 2.0 standard (32-bit PCI and 16-bit ISA)
  - Fully complies with PCI Local Bus specification V2.2 (support 4 master PCI slots)
- **PCI IDE Interface**
  Support two enhanced IDE ports up to four HDD devices with PIO mode 4 and Ultra DMA 33/66/100/133 mode transfer and Bus Master feature

- **Floppy Drive Interface**
  Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD
- **Serial Ports**
  - Support two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs
  - Two RS-232 ports (one RS-232/422/485 selectable port)
- **IR Interface**
  Support one 6-pin header for serial Standard Infrared wireless communication
- **Parallel Port**
  Support one parallel port with SPP, EPP and ECP modes
- **USB Interface**
  Support six USB (Universal Serial Bus) ports (2-port on bracket; 4-port headers) for high-speed I/O peripheral devices
- **PS/2 Mouse and Keyboard Interface**
  Support one 6-pin Mini-DIN connector for PS/2 keyboard/mouse connection through Y-Cable separation and one 5-pin shrouded connector for PS/2 keyboard connection through backplane connection
- **ATX Power Control Interface**
  One 4-pin header to support ATX power control with Modem Ring-On and Wake-On-LAN function
- **Auxiliary I/O Interfaces**
  System reset switch, external speaker, power and HDD active LED, etc
- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar with battery backup for 7-year data retention
- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and interval setting
  - Generate system reset
- **CompactFlash**
  - True IDE mode, compatibles with the ATA/ATAPI-4 specification
  - One Type II CF socket on secondary IDE channel for supporting up to 1GB memory
  - Bootable for no drives on primary channel
- **On-board VGA**
  - Integrated Graphics / Video Accelerator
  - Optimized share memory architecture (SMA)
  - 16/32/64MB frame buffer using system memory
  - Graphics engine clocks up to 133MHz decoupled from memory clock
  - Motion compensation for full speed DVD playback

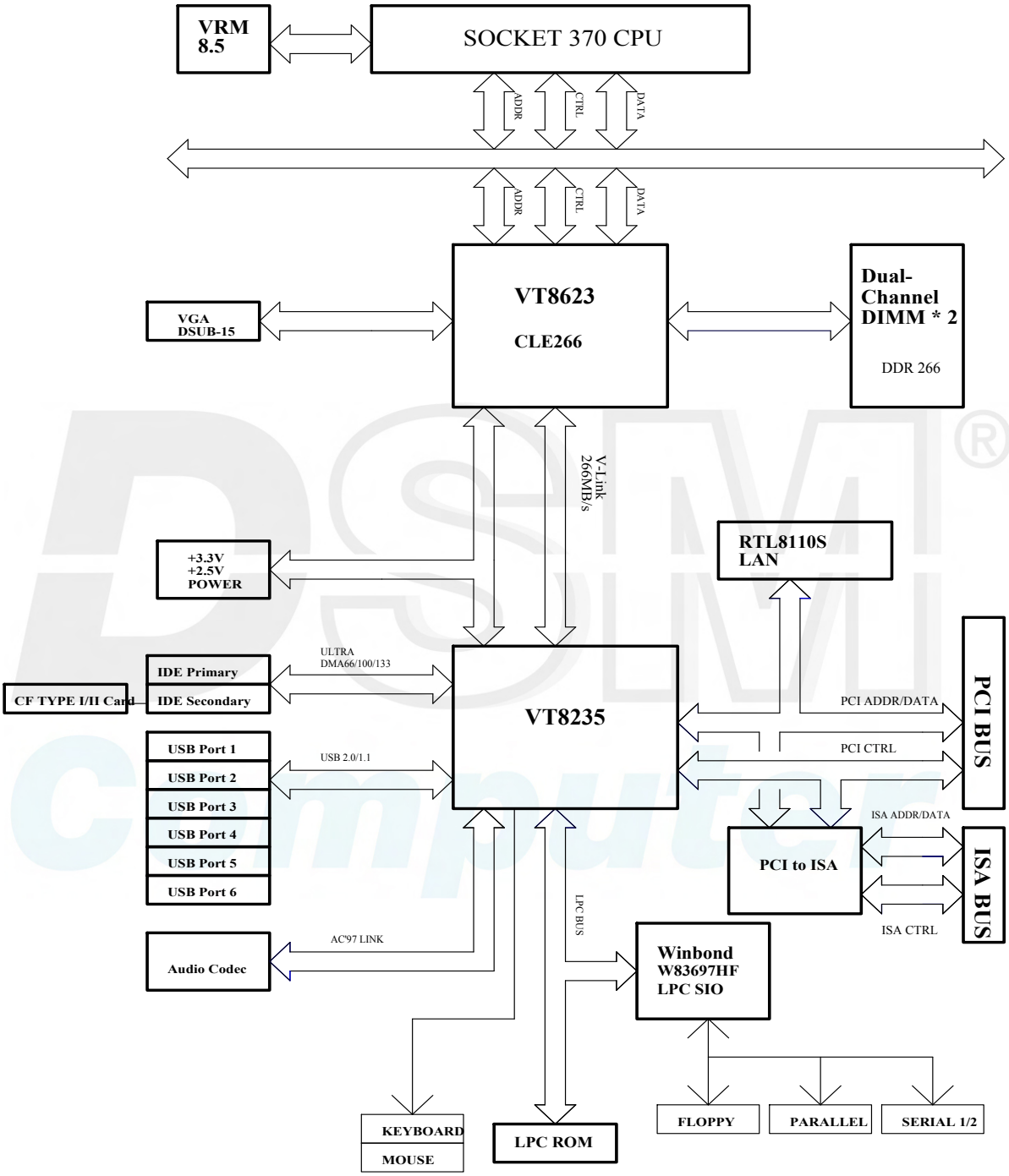
- **On-board Ethernet LAN**
  Realtek 8110S Gigabit Ethernet controller to support RJ-45 connector
- **High ISA Driving Capability**
  Support 64mA high driving capability for multi-slots ISA-bus
- **High Driving GPIO**
  Support 8 programmable high driving GPIO
- **Cooling Fans**
  Support three 3-pin headers for CPU, System and Power fans
- **System Monitoring Feature**
  Monitor CPU temperature, system temperature and major power sources, etc
- **Bracket**
  Support one Ethernet port with 2 indicators, dual USB ports, one Mini-DIN port for PS/2 keyboard/mouse, and one CRT port
- **Outline Dimension (L X W):**
  339.08mm (13.35") X 121.89mm (4.8")
- **Power Requirements:**
  - +12V (System) @0.5A
  - +5V (System) @6.0A
  - Test configuration:
    - CPU: Intel Pentium III-1.2GHz (133*9 L2 Cache: 512KB)
    - Memory: CENTON PC-2700 CL2.5 512MB*2
    - Primary Master IDE HDD: Samsung SV2042H
    - OS: Microsoft Windows 2000 Professional + SP4
    - Test Programs: 3D Mark 2001 PRO for loading VGA and Burning Test V3.0 for loading CPU
    - Connected Fans: Only CPU fan connected
    - Run Time: 30 minutes
- **Operating Temperature:**
  -5°C ~ 55°C (23°F ~ 131°F)
- **Storage Temperature:**
  -20°C ~ 80°C
- **Relative Humidity:**
  0% ~ 95%, non-condensing

1.3.1 Mechanical Drawing



DSM Computer

1.4 System Architecture



96M2891o System Block Diagram

Chapter 2
Hardware Configuration

This chapter gives and shows the definitions, the positions of jumpers, headers and connector. All of the configuration jumpers on 96M2891o are in the proper position. The default settings shipped from factory are marked with a star (★).

2.1 Jumper Setting

Please refer to Figure. 2-1 for the jumper locations

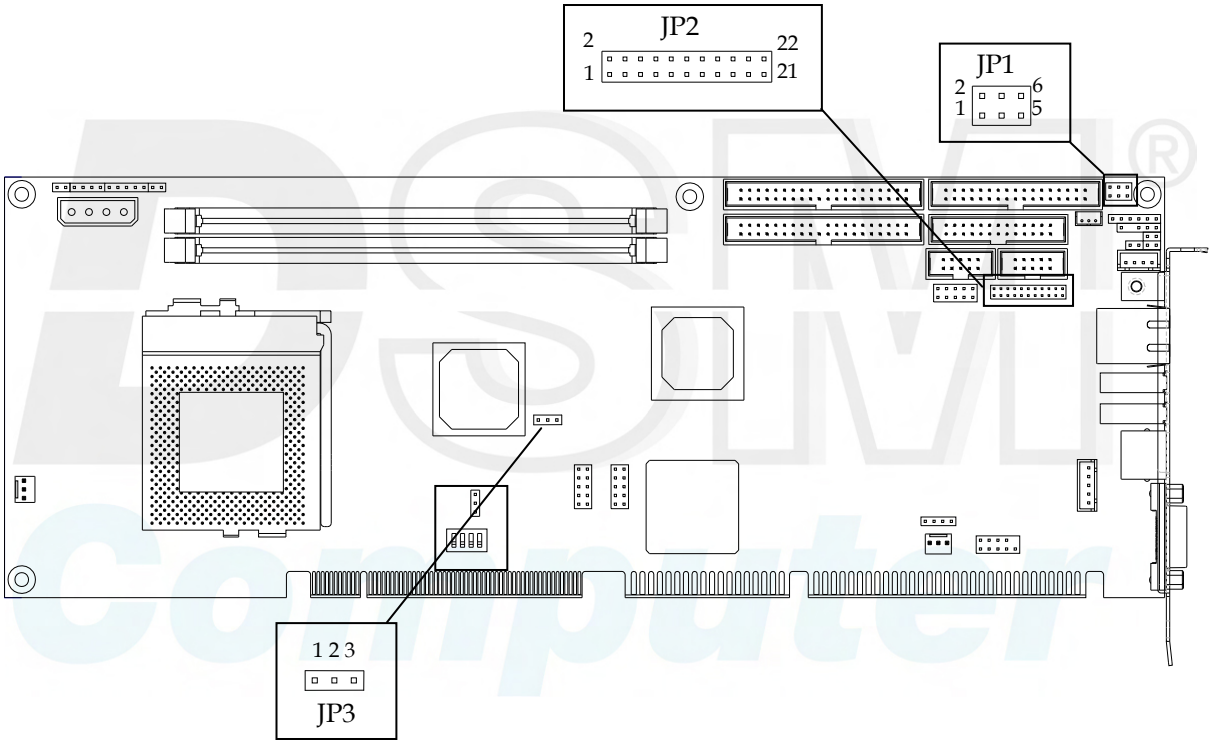


Figure. 2-1 96M2891o Jumper Location

JP1: ATX/AT Power Supply Selection

JP1	Function
1-3,2-4 Short	AT Power
3-5,4-6 Short	ATX Power ★

JP2: COM2 Function Setting

Function	Jumper Settings (pin closed)
RS-232★	5-6,9-11,10-12,15-17,16-18
RS-422	3-4,7-9,8-10,13-15,14-16,21-22
RS-485	1-2,7-9,8-10,19-20

JP3: CMOS Clear

JP3	Function
1-2 Short	Clear
2-3 Short	Normal ★

DSM® Computer

2.2 Connector Location

Please refer to Figure. 2-2 for the Connector locations

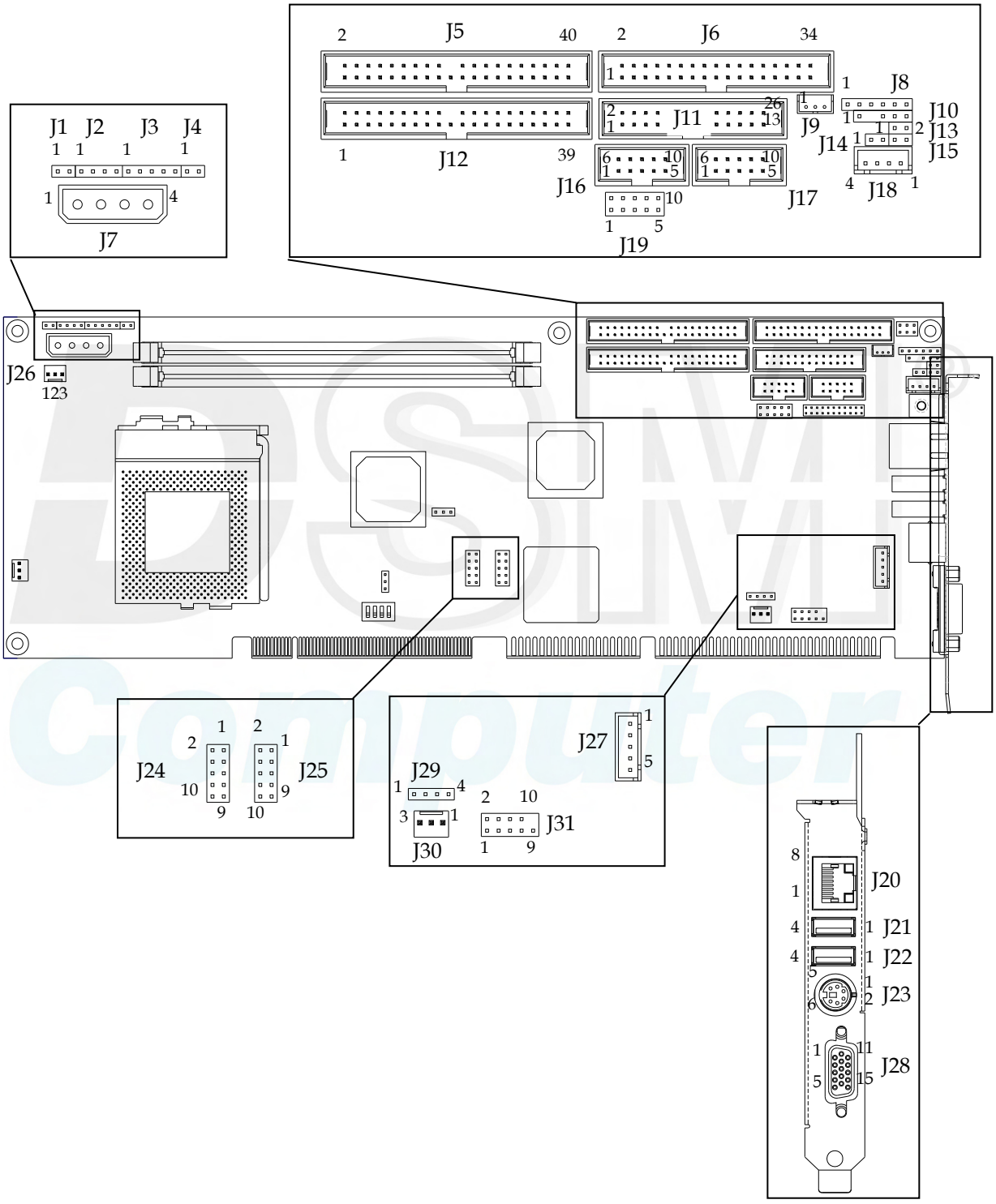


Figure 2-1 96M2891o Connector Location (Component Side)

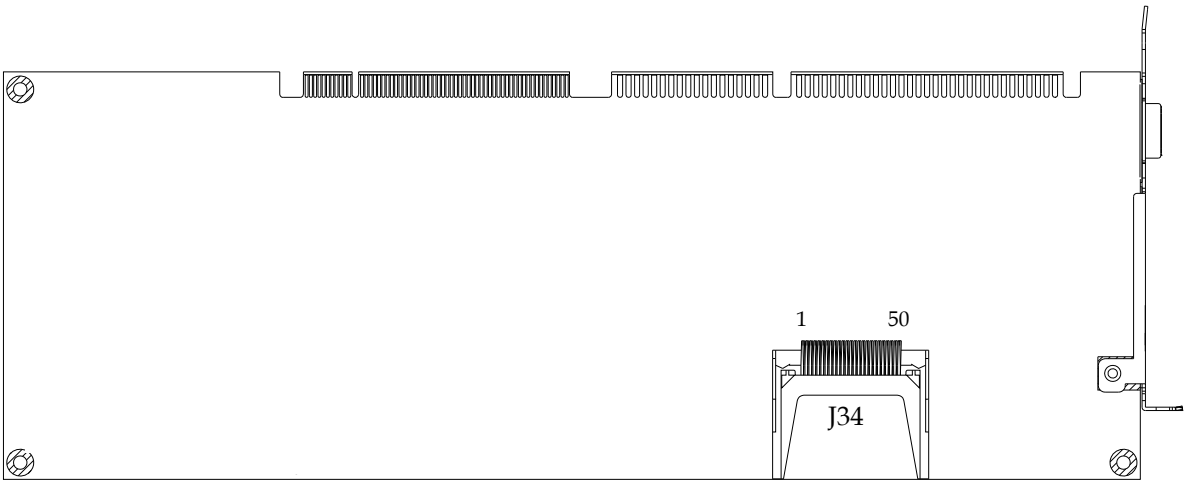


Figure 2-2 96M2891o Connector Location (Solder Side)

Connector's Function List

Connector Location	Description
J1	Reset Header
J2	External Speaker Header
J3	Power ON LED Header
J4	IDE Active LED Header
J5	IDE Primary Interface Connector
J6	Floppy disk interface
J7	Standard 4 pin power connector
J8	Standard IrDA Header
J9	Wake on Lan Connector
J10	SM Bus Connector
J11	Parallel Port Connector
J12	IDE Secondary Interface Connector
J13	Intruder pin header
J14	Wake on Ring pin Header
J15	ATX Power Button Interface
J16	Serial Port 2x5 shrouded connector (COM2)
J17	Serial Port 2x5 shrouded connector (COM1)
J18	ATX power control connector
J19	GPIO pin Header
J20	Ethernet RJ-45 Interface connector
J21	USB Port 1
J22	USB Port 2
J23	PS/2 Keyboard& Mouse connector
J24	External USB interface (Support two port)
J25	External USB interface (Support two port)
J26	FAN power connector

	PIN1 : GND PIN2 : +12V PIN3 : Pull-up +5V (Reserved for sense signal)
J27	External Keyboard connector
J28	VGA DSUB-15 connector
J29	CD IN pin Header
J30	FAN power connector PIN1 : GND PIN2 : +12V PIN3 : Pull-up +5V (Reserved for sense signal)
J31	Audio Connector

Pin Assignments of Connectors

J1: Reset Button Connector

PIN No	Signal Description
1	Reset Signal Input (Active low)
2	Ground

J2: External Speaker Connector

PIN No.	Signal Description
1	Speaker Signal Output (Open-drain w/ internal series 33 Ohm)
2	N/C
3	Ground
4	+5V

Note:
The pull-high voltage of external speaker is limited at 5V maximum.

J3: Power LED Connector

PIN No.	Signal Description
1	+5V (330 Ohm pull-up for power LED+)
2	N/C
3	Ground (For Power LED-)
4	N/C
5	Ground

J4: Hard Disk Drive LED Connector

PIN No.	Signal Description
1	+5V (270 ohm pull-up for HDD LED+)
2	HDD Active # (HDD LED-)

J5/J12 Primary/Secondary IDE Connector (IDE1/IDE2)

PIN No.	Signal Description	PIN No.	Signal Description
1	RESET#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull-down
29	DMA ACK#	30	Ground
31	INT REQ	32	N/C
33	SA1	34	CBLID#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

J6: FDC Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	2	Density Select 0
3	Ground	4	N/C
5	Ground	6	Density Select 1
7	Ground	8	Index#
9	Ground	10	Motor ENA#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor ENB#
17	Ground	18	Direction#
19	Ground	20	Step#

21	Ground	22	Write Data#
23	Ground	24	Write Gate#
25	Ground	26	Track 0#
27	Ground	28	Write Protect#
29	Ground	30	Read Data#
31	Ground	32	Head Select#
33	Ground	34	Disk Change#

J7: Standalone Power Connector

PIN No.	Signal Description
1	+12V
2	Ground
3	Ground
4	+5V

J8: IrDA Connector

PIN No.	Signal Description
1	+5V
2	N/C
3	IRRX
4	Ground
5	IRTX
6	N/C

J9: External Wake On LAN Connector

PIN No.	Signal Description
1	5VSB
2	Ground
3	External WOL Signal Input (Active low)

J10: SMBus Connector

PIN No.	Signal Description
1	SMBus Clock
2	N/C
3	Ground
4	SMBus Data
5	+3V

J11: Parallel Port Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialization#
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	N/C

J13: Intruder Detection Connector

PIN No.	Signal Description
1	Intruder Signal Input
2	Ground

J14: External Wake On Ring Connector

PIN No.	Signal Description
1	Ring Signal Input (Active low)
2	Ground

J15: ATX Power button Interface

PIN No.	Signal Description
1	Pull-high 1K Ohm to +5VSB
2	Power Button Signal Input (Active high)

J16: COM2 Serial Port 2 Connector

PIN No.	Signal Description		
	RS-232	RS-422	RS-485
1	DCD (Data Carrier Detect)	TX-	DATA-
2	RXD (Receive Data)	TX+	DATA+
3	TXD (Transmit Data)	RX+	N/C
4	DTR (Data Terminal Ready)	RX-	N/C
5	GND (Ground)	GND	GND
6	DSR (Data Set Ready)	N/C	N/C
7	RTS (Request to Send)	N/C	N/C
8	CTS (Clear to Send)	N/C	N/C
9	RI (Ring Indicator)	N/C	N/C
10	N/C	N/C	N/C

Note:
J16 (COM2) could be configurable as RS-232/422/485 with jumper JP2.

J17: COM1 Serial Port 1 Connector

PIN No.	Signal Description
	RS-232
1	DCD (Data Carrier Detect)
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND (Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)
10	N/C

J18: ATX Power Control Connector

PIN No.	Signal Description
1	ATX Power Good Signal (PW-OK)
2	ATX 5V Stand-by (5VSB)
3	ATX Power On Control (PS-ON)
4	Ground

J19: General Purpose I/O Connector

PIN No.	Signal Description
1	General Purpose I/O Port 0 (GPIO0)
2	General Purpose I/O Port 1 (GPIO1)
3	General Purpose I/O Port 2 (GPIO2)
4	General Purpose I/O Port 3 (GPIO3)
5	Ground
6	General Purpose I/O Port 4 (GPIO4)
7	General Purpose I/O Port 5 (GPIO5)
8	General Purpose I/O Port 6 (GPIO6)
9	General Purpose I/O Port 7 (GPIO7)
10	+5V

Note:
All General Purpose I/O ports can only apply to standard TTL ± 5% signal level (0V/5V).

J20: Ethernet RJ-45 Connector

PIN No.	Signal Description
1	MDI0+ (MDI0P)
2	MDI0- (MDI0N)
3	MDI1+ (MDI1P)
4	MDI2+ (MDI2P)
5	MDI2- (MDI2N)
6	MDI1- (MDI1N)
7	MDI3+ (MDI3P)
8	MDI3- (MDI3N)

J21/J22: Primary/Secondary USB Connector

PIN No.	Signal Description
1	+5V
2	USB0-
3	USB0+
4	Ground

J23: PS/2 Keyboard/Mouse Connector

PIN No.	Signal Description
1	Keyboard Data
2	Mouse Data
3	Ground
4	+5V
5	Keyboard Clock
6	Mouse Clock

J24/J25: External USB Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	Frame Ground
3	USB2-	4	Ground
5	USB2+	6	USB3+
7	Ground	8	USB3-
9	Frame Ground	10	+5V

J26/30: CPU/System Fan Connector

PIN No.	Signal Description
1	Ground
2	+12V
3	Fan Speed Detecting signal

Note:
Please make sure the fan connected to J26/30 must be a 12V input Fan. Otherwise, there might be unexpected damage with either Fan or SBC.

J27: External Keyboard Connector

PIN No.	Signal Description
1	Keyboard Clock
2	Keyboard Data
3	N/C
4	Ground
5	+5V

J28: VGA DSUB-15 CRT Connector

PIN No.	Signal Description
1	Red
2	Green
3	Blue
4	Monitor ID0 (MONID0) (5V I/F)
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V
10	Ground
11	Monitor ID1 (MONID1) (5V I/F)
12	VGA DDC Data (5V I/F)
13	Horizontal Sync. (HSYNC) (5V I/F)
14	Vertical Sync. (VSYNC) (5V I/F)
15	VGA DDC Clock (5V I/F)

J29: Audio CD-in Connector

PIN No.	Signal Description
1	CD-in Left Channel
2	CD Ground
3	CD Ground
4	CD-in Right Channel

J31: Audio MIC/Line-in/Line-out Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	MIC with Reference Voltage	2	Analog Ground
3	Line-in Left Channel	4	Analog Ground
5	Line-in Right Channel	6	Analog Ground
7	Line-out Left Channel	8	Analog Ground
9	Line-out Right Channel	10	N/C

Note:
The Reference Voltage on MIC signal offers 2.25V~2.75V with 5mA drive.

J34: Compact Flash Card

PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	26	N/C
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	HDC CS0#	32	HDC CS1#
8	Ground	33	Ground
9	Ground	34	IOR#
10	Ground	35	IOW#
11	Ground	36	Pull-Up
12	Ground	37	INT REQ
13	VCC	38	VCC
14	Ground	39	Pull-down
15	Ground	40	N/C
16	Ground	41	RESET#
17	Ground	42	IOCHRDY
18	SA2	43	N/C
19	SA1	44	DMA REQ
20	SA0	45	HDD Active#
21	Data 0	46	Pull-down
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	N/C	49	Data 10
25	N/C	50	Ground

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you to set up onboard PCI device and handle WDT operation in software programming.

3.1 Socket 370 Celeron/Pentium-III Processor

Installing S370 CPU

1) Lift the handling lever of CPU socket outwards and upwards to the other end.
2) Align the processor pins with pin holes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.
3) Push down the lever to lock processor chip into the socket.
4) Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the socket 370.

Removing CPU

1) Unlock the cooling fan first.
2) Lift the lever of CPU socket outwards and upwards to the other end.
3) Carefully lift up the existing CPU to remove it from the socket.
4) Follow the steps of installing a CPU to change to another one or place handling bar to close the opened socket.

Configuring System Bus

96M2891o will automatically detect system bus based on the type of CPU used. However, users may configure CPU core/bus ratio in BIOS setup menu for engineering sample processors.

3.2 Main Memory

Two DIMM sockets support 200/266 DDR-SDRAM up to 2GB System Memory. 96M2891o will automatically detect memory clock, based on the processor and DDR-SDRAM used.

For system compatibility and stability, don't use memory module without brand. 96M2891o uses non-ECC, non-buffered DIMMS only. Randomly installing DIMM in any one of the DIMM sockets is allowed. You can install different size of DRAM module on DIMM1, DIMM2 or all to make the system boot.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install your DRAM module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

Note:

(1) To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade your system performance without acquiring technical information.

(2) Due to VIA CLE266 chipset limitation, the type of DDR-SDRAM with ECC function is not supported. In the event of ECC DDR-SDRAM being adopted, ECC function is NOT supported while ECC DDR-SDRAM can act only as a normal DDR-SDRAM without causing any error.

(3) Due to VIA CLE266 chipset limitation, Buffered (Registered) DDR-SDRAM is not supported. Buffered DDR-SDRAM will simply freeze up the system.

3.3 Installing the Single Board Computer

To install your 96M2891o into standard chassis or proprietary environment, you need to perform the following :

Step 1 : Check all jumpers setting on proper position
Step 2 : Install and configure CPU and memory module on right position
Step 3 : Place 96M2891o into the dedicated position in your system
Step 4 : Attach cables to existing peripheral devices and secure it

WARNING
Please ensure that your SBC is properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of golden finger and ISA-bus slot. **It is recommended to apply 4-pin 5-1/4" IDE device power connectors from your power supply onto J7 to ensure a sufficient current supply.**

Note:
Please refer to section 3.3.1 to 3.3.3 to install Chipset/VGA/LAN drivers.

3.3.1 VIA CLE266 Chipset Component Driver

VIA CLE266 chipset is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows-95/98/98SE/2000, please install VIA 4in1 Chipset Component driver before any of other Drivers are installed.

You can find very easily the chipset component driver in \Chipset\VIA directory of 96M2891o CD-title. Please execute "VIAHyperion4in1???v.exe" to start installation.

3.3.2 Integrated Graphics / Video Accelerator Chipset

It is optimized share memory architecture and 16/32/64MB frame buffer using system memory. This combination makes 96M2891o an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output.

Drivers Support

Please find VIA CLE266 Graphica driver in the 96M2891o CD-title. Drivers support Windows-98/98SE/ME, Windows-2000, and Linux. Pls confirm drivers !

\Graphic\Via_Cle

(1) Windows-95/98/98SE/ME: Please execute \Graphic\Via_Cle\win9x\ Setup.exe to start graphics driver installation.

(2) Windows-2000/XP: Please execute \Graphic\Via_Cle\Win2KXP\ Setup.exe to start graphics driver installation.

(3) Redhat Linux: Please refer to the "VIA RH9.0 CLE266 Display Driver ver0.91A.gz" file in \Graphic\Via_Cle\Linux directory for graphics drivers installation guide.

3.3.3 Realtek 8110S Gigabit Ethernet controller

There is not any jumper available for disabling on-board Ethernet. 96M2891o does not require its on-board LAN device to be disabled to work with other add-on LAN cards.

Drivers Support

Please find 8110S driver in /Ethernet/ R8110s directory of 96M2891o CD-title. The drivers support Windows-NT 3.51/4.0, Windows-95/98/98SE, Windows-2000, Windows-2000, SCO OpenServer 5.0.2, SCO Unixware 7.0, OS2 and Linux.

On-board LED Indicator (for LAN status)

96M2891o provides two LED indicators to report Ethernet interfaces status. Please refer to the table below as a quick reference guide.

8110S	Name of LED	Operation of Ethernet Port		
		On	Off	Blink
LED1	LAN Link LED	Good link	Bad link	
LED2	LAN speed and Active LED	100 Mbps: Green 1000Mbps: Orange	10 Mbps	Active

3.3.4 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

JP3	FUNCTION
1-2	Clear CMOS Contents
2-3	★ Normal Operation

To correct operate CMOS Clear function, users may turn off the system, move JP3 jumper to 1-2 position (this will not consume any power). To clear CMOS, please turn on the power and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP3 back to 2-3 position (Normal Operation) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load in BIOS default setting.

3.3.5 Watch Dog Timer Programming

Watch Dog Timer is a special function; the user can monitor and control the system via software or hardware implementation. If the implementation does not respond in seconds, the system will be rebooted automatically. With this mechanism, the lost or damage can be minimized, when there is not monitoring personnel onsite. Following list are 96M2891o Watch Dog Timer sample Code, this is for reference only:

```
/*              W83697 WDT DEMO PROGRAM
                    File Name : 697_WDT.C
                    Write by : John Ma
*/

#include <stdio.h>
#include <conio.h>
#include <dos.h>

unsigned char time_out;                    /* recode WDT time-out value */

void show_title(void)
{
    clrscr();
    printf("\n\nDSM W83697HF WDT DEMO PROGRAM V1.00\n\n");
    printf("1.Set WDT Time-out value and Enable WDT\n");
    printf("2.Retriggle WDT\n");
    printf("3.Disable WDT and Exit\n");
    printf("\n\nPress 1 - 3 :");
```

```
}

void enable_WDT(void)
{
    printf("\n\nPress number 1 - 255 to select time-out time(second)");
    scanf("%d",&time_out);
    asm cli;
    /* Step1. Enter W83697 extended function mode:
        write 0x87 to port 2e twice
    */
    outportb(0x2e, 0x87);
    outportb(0x2e, 0x87);
    /* Step2. Select W83697 Pin119 to be WDTO#
        write 0x29 to port 2e to point W83697 CR_29
        write 0x20(bit6:5) to port 2f to select WDTO#
    */
    outportb(0x2e, 0x29);
    outportb(0x2f, 0x20);
    /* Step3. Select W83697 logic device 8:
        write 0x07 to port 2e to point W83697 CR_07
        write 0x08 to port 2f to select logic device 8
    */
    outportb(0x2e, 0x07);
    outportb(0x2f, 0x08);
    /* Step4. Enable Logic device 8:
        write 0x30 to port 2e to point W83697 CR_30
        write 0x1 to port 2f to enable
    */
    outportb(0x2e, 0x30);
    outportb(0x2f, 0x1);
    /* Step5. Config W83697 WDT using second to be unit:
        write 0xf3 to port 2e to point W83977ATF CR_f3
        write 0x00 to port 2f to select time-out unit is second
    */
    outportb(0x2e, 0xf3);
    outportb(0x2f, 0x00);
    /* Step6. Set WDT time-out time:
        write 0xf4 to port 2e to point W83697 CR_f4
        write time_out to port 2f to set time-out time
    */
    outportb(0x2e, 0xf4);
    outportb(0x2f, time_out);
    /* Step7. Exit W83697 extended function mode:
        write 0xaa to port 2e
    */
    outportb(0x2e, 0xaa);
```

```
    asm sti;
}

void retriggle_WDT(void)
{
    asm cli;
    /* Step1. Enter W83697 extended function mode:
        write 0x87 to port 2e twice
    */
    outportb(0x2e, 0x87);
    outportb(0x2e, 0x87);
    /* Step2. Select W83697 logic device 8:
        write 0x07 to port 2e to point W83697 CR_07
        write 0x08 to port 2f to select logic device 8
    */
    outportb(0x2e, 0x07);
    outportb(0x2f, 0x08);
    /* Step3. Retriggle WDT time-out time:
        write 0xf4 to port 2e to point W83697 CR_f4
        write time_out to port 2f to set time-out time in W83697
    */
    outportb(0x2e, 0xf4);
    outportb(0x2f, time_out);
    /* Step4. Exit W83697 extended function mode:
        write 0xaa to port 2e
    */
    outportb(0x2e, 0xaa);
    asm sti;
    printf("\n\n!!! Trigle !!!");
    delay(1000);
}

void disable_WDT(void)
{
    asm cli;
    /* Step1. Enter W83697 extended function mode:
        write 0x87 to port 2e twice
    */
    outportb(0x2e, 0x87);
    outportb(0x2e, 0x87);
    /* Step2. Select W83697 logic device 8:
        write 0x07 to port 2e to point W83697 CR_07
        write 0x08 to port 2f to select logic device 8
    */
    outportb(0x2e, 0x07);
    outportb(0x2f, 0x08);
```

```
    /* Step3. Disable WDT :
        write 0xf4 to port 2e to point W83697 CR_f4
        write 0x00 to port 2f to set time-out time in W83697
    */
    outportb(0x2e, 0xf4);
    outportb(0x2f, 0x00);
    /* Step4. Exit W83697 extended function mode:
        write 0xaa to port 2e
    */
    outportb(0x2e, 0xaa);
    asm sti;
}

int main(void)
{
    int key;

    show_title();
    while(1)
    {
        key = getch();
        switch (key)
        {
        case '1':
            enable_WDT();
            break;
        case '2':
            retriggle_WDT();
            break;
        case '3':
            disable_WDT();
            return(0);
        default:
            break;
        }
        show_title();
    }
}
```

Chapter 4
BIOS Setup Information

96M2891o is equipped with the AWARD BIOS stored in Flash ROM. This BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, 96M2891o communicates with peripheral devices, and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.??

If the message disappears before you respond, and you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or press the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the key at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu

Once you enter 96M2891o AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix- AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Management Setup ▶ PnP/PCI Configurations ▶ PC Health Status	▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type …	

Note:
It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

Phoenix- AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Mon, Jul 26 2004	Item Help
Time (hh:mm:ss)	10 : 29 : 50	
▶ IDE Primary Master	[Maxtor 94098U8]	Menu Level ▶
▶ IDE Primary Slave	[CD-540E]	
▶ IDE Secondary Master	[None]	Change the day, month, year and century
▶ IDE Secondary Slave	[None]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EVG/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	490496K	
Total Memory	491520K	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

■ **Menu Selections**

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Primary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
IDE Secondary Master	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
IDE Secondary Slave	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Press <Enter> to enter the next page for detail hard drive settings
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, But Keyboard All, But Diskette All, But Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as hard disk drive or cdrom drive. It uses a separate sub menu to configure each hard disk drive.

Phoenix- AwardBIOS CMOS Setup Utility
IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto	Menu Level ▶
Access Mode	Auto	
Capacity	40981MB	To atuo-detect the HDD's size, head … on this channel
Cylinder	19617	
Head	16	
Precomp	0	
Landing Zone	19616	
Sector	255	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

■ **Menu Selections**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking

		program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	[Disabled]	Item Help
CPU Internal Cache	[Enabled]	
External Cache	[Enabled]	Menu Level ▶
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	Allow you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.
Second Boot Device	[HDD-0]	
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Swap Floppy Seek	[Disabled]	
Boot Up Floopy Seek	[Enabled]	
Boot up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/sec)	6	
X Typematic delay (Msec)	250	
Security Option	[Setup]	
OS Select For DRAM > 64MB	[Non-OS2]	
Video BIOS Shadow	[Enabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Virus Warning

It allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache / External Cache

These two categories speed up memory access. However, it depends on CPU/Chipset design.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2 HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN and Disabled.

Boot Other Device

Select Your Boot Device Priority.

The choice: Enabled, Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose enable to assign physical driver B to logical drive A and Vice-Versa.

The choice: Enabled, Disabled.

Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control Gate A20 and Normal – a pin in the keyboard controller controls Gate A20. Default is Fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller – When enabled, the typematic rate and typematic delay can be select.

The choice: Enabled, Disabled.

Typematic Rate (Chars/sec)

The rate at which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic delay (Msec)

The delay before key strokes begin to repeat.

The choice: 250, 500, 750, and 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

OS Select For DRAM > 64MB

Select OS/2 only if you are running SO/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Video BIOS Shadow

Enabled copies Video BIOS to shadow RAM Improves Performance.

The choice: Enabled, Disabled.

4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the VIA CLE266 Chipset. This Chipset manages bus speeds and access to system memory resources, such as DRAM (DDR SDRAM) and the external cache. It also coordinates communication between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced Chipset Features

Memory Hole	[Disabled]	Item Help
System BIOS Cacheable	[Disabled]	
Video RAM Cacheable	[Disabled]	Menu Level ▶
Onboard LAN Control	[Enabled]	
VGA Share Memory Size	[32M]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choice: Disabled, 15M-16M.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video RAM Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" to ignore this BIOS caching function.

The choice: Enabled, Disabled.

Onboard LAN Control

This item allows you to enable LAN function.

The choice: Enabled, Disabled.

VGA Share Memory Size

Users can set the display memory size that shared from main memory.

The choice: 16M, 32M, and 64M.

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility
Integrated Peripherals

▶ VIA OnChip IDE Device	[Press Enter]	Item Help
▶ VIA OnChip PCI Device	[Press Enter]	
▶ Super IO Device	[Press Enter]	Menu Level ▶

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
VIA OnChip IDE Device

OnChip Primary PCI IDE	[Enabled]	Item Help
OnChip Secondary PCI IDE	[Enabled]	
Primary Master PIO	[Auto]	Menu Level ▶
Primary Slave PIO	[Auto]	
Secondary Master PIO	[Auto]	
Secondary Slave PIO	[Auto]	
Primary Master UDMA	[Auto]	
Primary Slave UDMA	[Auto]	
Secondary Master UDMA	[Auto]	
Secondary Slave UDMA	[Auto]	
IDE HDD Block Mode	[Enabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

OnChip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

The choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA 33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA 33/66/100/133, select Auto to enable BIOS support.

The choice: Auto, Disabled.

IDE HDD Block Mode

If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
VIA OnChip PCI Device

VIA-3058 AC97 Audio	[Audio]	Item Help
Init Display First	[PCI Slot]	
OnChip USB Controller	[Enabled]	Menu Level ▶
OnChip USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

VIA-3058 AC97 Audio

This item allows you to enable AC97 Audio function.

The choice: Auto, Disabled.

Init Display First

This item allows you to select the first display port to be initialized.

The choice: PCI Slot, AGP.

OnChip USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choice: Enabled, Disabled.

OnChip USB 2.0 Controller

This entry is for disable/enable EHCI controller only. This BIOS itself may/may not have high speed USB support built in, the support will be automatically turn on when high speed device were attached.

The choice: Enabled, Disabled.

USB Keyboard Support

This item allows you to enable USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

The choice: Enabled, Disabled.

USB Mouse Support

This item allows you to enabled USB Mouse function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Super IO Device

Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	Menu Level ▶
UART Mode Select	[Normal]	
X RxD, TxD Active	Hi, Lo	
X IR Transmission Delay	Enabled	
X UR2 Duplex Mode	Half	
X Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
X EPP Mode Select	EPP1.7	
X ECP Mode Use DMA	3	
Watch Dog Timer Select	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Onboard FDC Controller

This item allows you to enable/disable onboard Floppy disk controller.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows users to select Infrared transmission mode.

Normal	Disable Infrared function
IrDA	Select IrDA mode transmission
ASKIR	Select ASKIR mode transmission

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available:

Hi, Hi	High rate for receiving / High rate for transmitting
Hi, Lo	High rate for receiving / Low rate for transmitting
Lo, Hi	Low rate for receiving / High rate for transmitting
Lo, Lo	Low rate for receiving / Low rate for transmitting

IR Transmission Delay

This option will be available when IR is enabled.

The choice: Enabled, Disabled.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode

The choice: Full, Half.

Use IR Pins

The available choices are IR-Rx2Tx2/ RxD2, TxD2.

The choice: IR-Rx2Tx2 / RxD2, TxD2.

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

The choice: Disabled, 378/IRQ7, 278/IRQ5, and 3BC/IRQ7.

Parallel Port Mode

There are four different modes for the onboard parallel port :

SPP	Switch to SPP mode
EPP	Switch to EPP mode
ECP	Switch to ECP mode
ECP + EPP	Switch to ECP + EPP mode

EPP Mode Select

Select different version of EPP mode.

The choice: EPP1.7, EPP1.9.

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choice: 3, 1.

Watch Dog Timer Select

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

4.8 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	[Enabled]	Item Help
Power Management	[User Define]	
HDD Power Down	[Disabled]	Menu Level ▶
Suspend Mode	[Disabled]	
Video Off Option	[Suspend -> Off]	
Video Off Method	[V/H SYNC+Blank]	
Soft-Off by PWRBTN	[Instant-Off]	
Ac Loss Auto Restart	[On]	
▶ IRQ/Event Activity Detect	[Press Enter]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allow you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, and 1 Hour.

Video Off Option

The choice: Always On, Suspend -> Off.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Initial display power management signaling.

Soft-Off by PWRBTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

Ac Loss Auto Restart

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores power back
Off	System stays at power –off

Phoenix- AwardBIOS CMOS Setup Utility
IRQ/Event Activity Detect

Wake-up by PCI card	[Disabled]	Item Help
Modem Ring Resume	[Disabled]	
RTC Alarm Resume	[Disabled]	Menu Level ►
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 : 0	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Wake-Up by PCI card

This option can be enabled to support Wake Up by on-board LAN.

The choice: Disabled, Enabled.

Modem Ring Resume

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem.

The choice: Enabled, Disabled.

RTC Alarm Resume

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

Time(hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0~59).

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or Personal Computer **I**nterconnect, is a system, which allows I/O devices to operate at speeds nearing the speed the CPU itself, uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

PNP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto (ESCD)]	Menu Level ▶
X IRQ Resources	Press Enter	
X DMA Resources	Press Enter	Select Yes if you are using a plug and play capable operating system Select No if you need the BIOS to configure non-boot devices.
PCI/VGA Palette Snoop	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

PNP Configuration

Select Yes if you are using a plug and play capable operating system Select No if you need the BIOS to configure non-boot devices.

The choice: No, Yes.

Reset Configuration Data

Default is disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure all the boot and plug and play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and play standard whether designed for PCI or ISA bus architecture.

Enter for more options IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/ IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI/ISA PnP, Legacy ISA.

DMA Resources

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DMA channel.

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and play standard whether designed for PCI or ISA bus architecture.

Enter for more options DMA-0/ DMA-1/ DMA-3/ DMA-5/ DMA-6/ DMA-7 assigned to.

The choice: PCI/ISA PnP, Legacy ISA.

PCI/VGA Palette Snoop

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the plug and play standard whether designed for PCI or ISA bus architecture

The choice: Enabled, Disabled.

4.10 PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current System Temp.	35℃/95℉	
Current CPU Temperature	40℃/104℉	Menu Level ▶
Current CPUFAN1 Speed	4856 RPM	
Current CPUFAN2 Speed	0 RPM	
Vcore	1.48 V	
+3.3 V	3.31V	
+5 V	4.89 V	
+12 V	11.91 V	
-12 V	-12.11 V	
-5 V	-4.89 V	
VBAT(V)	3.28 V	
5VSB(V)	5.37 V	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

CPU Warning Temperature

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled.

The choices : Disabled, 50℃/122℉, 53℃/127℉, 56℃/133℉, 60℃/140℉,
63℃/145℉, 66℃/151℉, 70℃/158℉.

4.11 Frequency/Voltage Control

Phoenix- AwardBIOS CMOS Setup Utility
Frequency / Voltage Control

Auto Detect PCI/DIMM Clk [Enabled]	Item Help
	Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Auto Detect PCI/DIMM Clk

The choice: Enabled, Disabled.

4.12 Default Menu

Selecting "Defaults" from the main menu shows you two options, which are described below,

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.13 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

Set Supervisor Password: can enter and change the options of the setup menus.

Set User Password: just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

4.14 Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? N

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get 96M2891o running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the device cables required before turning on AT power. CPU, CPU fan, CPU fan power cable, 184-pin DDR SDRAM, keyboard, mouse, floppy drive, IDE hard disk, printer, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with 96M2891o, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that DSM Computer AG has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press, "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the floppy drive, COM1/COM2 ports, parallel port, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4
Disable COM2 serial port to release IRQ #3
Disable parallel port to release IRQ #7
Disable PS/2 mouse to release IRQ #12 ,…, etc.

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Counter
IRQ #1	Keyboard
IRQ #3	COM2
IRQ #4	COM1
IRQ#5	Multimedia Device
RQ #6	Floppy Disk Controller
IRQ #7	Printer Port (Parallel Port)
IRQ #8	System CMOS / Real time Clock
IRQ #9	Microsoft ACPI-Compliant System
IRQ #10	USB 1.0/1.1 UHCI Controller
IRQ #10	USB 1.0/1.1 UHCI Controller
IRQ #11	USB 2.0 ECHI Controller
IRQ #11	Network Controller
IRQ #12	PS/2 Compatible Mouse
IRQ #14	VIA Bus Master PCI IDE Controller
IRQ #14	Primary IDE Controller
IRQ #15	VIA Bus Master PCI IDE Controller
IRQ #15	Secondary IDE Controller

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.2 FAQ

Unboot issues

Symptom: After installing CPU and everything required, but why my 96M2891o is still not working?

Solution: First of all, please make sure that you've used the backplane, which follows PICMG spec.

Symptom: After shutting down Windows, why my system failed to boot up again?

Solution: First, please make sure your ACPI in the BIOS is disabled. Indeed, when system is running with AT power supply and enabled ACPI, it will cause system to failed to boot up. That's because system will go to sleeping mode as shutting down under Windows. To solve this problem, you have to either clean CMOS or push ATX Power button.

Symptom: My 96M2891o just keeps beeping, and nothing has been shown on the screen?

Solution: As a matter of fact, each beep sound represents different definition of error message. Therefore, please refer to the table as follow,

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Information & Support

Q: I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is started?

A: First of all, you need to use the 80-pin ATA-66 IDE flat cable to have this function ready. During POST, you can see ATA-66 (or 100) message while hard drive is being detected. Besides, after Microsoft series OS installation successfully, you must install ATA-66/100 driver, then the function can be active.

Q: I am using an ATA-66 or 100 hard drive, how can I know that ATA 66/100 is active?

A: As matter of fact, you need to use 80 pins ATA-66 IDE cable to enable ATA 66 function. While POST stage of detecting hard drive, you will see ATA – 66/100 message. Besides, after installing Microsoft Windows system, you also need to install ATA 66/100 driver. Otherwise, this function won't be active in Windows.

Q: After setting up my serial port from RS-232 to RS-485, why my serial port still cannot work.

A: Unlike RS-232, RS-485's signal is differential signal. Therefore, its data must connect to same definition of pins. For example, there are only two pins in RS-485, which are DATA – and DATA +. Its connection must be "DATA – connects to DATA –", and "DATA + connects to DATA +". Otherwise, RS-485 won't be able to transfer its data.

Q: After installing Compact Flash, why the device on Secondary has been missing?

A: As a matter of fact, Compact Flash is set to master on Secondary channel. If you accidentally set any IDE device to the same channel as Compact Flash default does. Your device will work improperly; the setting of Compact Flash is unchangeable.

Q: How can password be erased when forgotten the password of BIOS?

A: Please set JP13 to 1-2 pins for few sec, and then put jumper back to 3-4 pins.

Note:
Please visit our technical web site at
http://www.DSM.AG

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

Memory Area	Size	Device Description
0000 – 003F	1K	Interrupt Area
0040 – 004F	0.3K	BIOS Data Area
0050 – 006F	0.5K	System Data
0070 – 04C3	17K	DOS
04C4 – 057F	2.9K	Program Area
0580 – 9FFE	617K	[Available]
9FFF – 9FFF	0.1K	Unused
= Conventional memory ends at 640K =		
A000 - AFFF	64K	VGA Graphics
B000 – B7FF	32K	Unused
B800 - BFFF	32K	VGA Text
C000 – CE7F	58K	Video ROM
CE80 – D049	7.2K	Unused
D04A - DFFF	62K	High RAM
E000 – EFFF	64K	Page Frame
F000-FFFF	64K	System ROM
HMA	64K	First 64K Extended

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

IRQ#	Current Use	Default Use
IRQ 0	SMARTDRV	System Timer
IRQ 1	SMARTDRV	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM2
IRQ 4	System ROM	COM1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	[Unassigned]	Usable IRQ
IRQ 8	System ROM	Real-time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	[Unassigned]	Usable IRQ